

ABSTRACT OF THE DISCLOSURE

In a BAYER circuit, a process for controlling precipitation in which particle size quality of alumina hydrate produced in the circuit and circulating in feed tanks is monitored utilizing a calibration step and a control step. In the calibration step, cumulative percentage of alumina hydrate particles circulating in the feed tanks in the circuit that are finer than $X_2 \mu\text{m}$, defined as CPFT X_2 , is measured vs. time and cumulative percentage of alumina hydrate particles circulating in the feed tanks in the circuit that are finer than $X_1 \mu\text{m}$, defined as CPFT X_1 vs. time, is measured, where X_1 and X_2 are predetermined particles sizes and X_1 is smaller than X_2 . A relationship R between CPFT X_1 and later changes in CPFT X_2 , is determined and upper and lower trigger thresholds of CPFT X_1 which correspond to maximum permissible variations in CPFT X_2 are defined. In the control step, CPFT X_1 and CPFT X_2 are regularly measured, and R and the correlation between CPFT X_2 and the particle size of hydrate produced are updated. Corrective action is taken at the beginning of precipitation when the measured value of CPFT X_1 reaches one of the trigger thresholds.

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